

# RELATIONSHIP BETWEEN IMPAIRED MELATONIN SECRETION AND DURATION, RADIOLOGICAL STAGE AND PHYSICAL ACTIVITY OF RHEUMATOID ARTHRITIS

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There is a close relationship between the development of severe autoimmune diseases and disorders of the neuroendocrine immune regulation of the body [1]. The role of melatonin as the main mediator of neuroendocrinoimmune interactions in rheumatoid arthritis (RA) remains poorly understood [2].

The aim of the study was to determine the daily serum melatonin profile of RA patients with different duration of the disease, radiological stage and physical activity.

**Methods.** The daily serum melatonin profile of patients with active RA (n=105, mean age 49.8±12.6 years, 75.5% of women) was compared with that of healthy subjects from the general population (n=30). In addition, we investigated daily serum melatonin secretion in relation to duration of the disease, radiological progression and physical activity (HAQ). Patients were divided into 4 groups depending on the RA duration (mean 8.4±6.6 years): 1<sup>st</sup> group - up to 2 years (n=12), 2<sup>nd</sup> group - 2-5 years (n=37), 3<sup>rd</sup> group - 6-10 years (n=26), 4<sup>th</sup> group - more than 10 years (n=30). Depending on the radiological progression, patients were divided into stages: 1<sup>st</sup> stage (n=16), 2<sup>nd</sup> stage (n=64), 3<sup>d</sup> stage (n=25). Melatonin serum levels was determined by the enzyme immunoassay at 8 and 20 o'clock. For statistical analysis were used the Man - Whitney test and the Spearman rank correlation method.

**Results.** The melatonin serum levels in RA patients were in 2 and 3 times higher in the morning and evening time than those of healthy individuals in the control group (p=0.001). We noticed significant correlations between melatonin level and disease duration ( $r_s = -0.5$ ,  $p < 0.01$ ). Significant differences in melatonin levels were revealed in RA patients in 1<sup>st</sup> and 3<sup>rd</sup> groups (p=0.049), in 1<sup>st</sup> and 4<sup>th</sup> groups (p = 0.012), in 2<sup>nd</sup> and 3<sup>rd</sup> groups (p=0.001), in 2<sup>nd</sup> and 4<sup>th</sup> groups (p=0.001). Also we determined significant differences in melatonin levels between 1<sup>st</sup> and 2<sup>nd</sup> radiological stages (p =0,001) of RA patients. However, melatonin levels were not related to physical activity (HAQ).

**Conclusions.** We found a close relationship between serum melatonin levels, duration of the disease and radiological progression in RA patients. The most significant changes in melatonin metabolism occur in patients with the duration of the disease up to 5 years and with lower radiological stages. Our data indicate the important role of neurotransmitter in the pathogenesis of RA, especially at the initial stage of the disease.

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